DURANGO

BACKUP UTILITY

USER GUIDE

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BKU120	A-000	03/17/81	31
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Introduction

The BACKUP UTILITY is an end user oriented utility that is used to periodically backup any critical data base. The importance of this utility is realized when critical data is lost and the inability to recover this data impairs the operation of a business. With a backed up data base at hand the user may restore the lost data with minimum impact to the overall operation.

The Backup Utility operation is interactive prompting and responding to operator commands in a conversational manner. The operator selects functions from various menu's and enters data into "fill-in-the-blank" type screen displays. In most cases, the utility uses screen prompts and messages to guide the operator through step-by-step procedures.

Backup Utility Considerations

A recommended method for backing up a Diskette data base is the use of three backup diskette sets. In this manner a system of backup diskette sets can be rotated and maintained to insure the user of a recoverable, comprehensive data base. It is recommended that the processing activities be backed up each day. The example below illustrates an accepted method for using the three backup diskette set, each backup diskette set from the previous day would become the master data base for the days processing.

- Example: In this example the backup diskette sets will be labeled A, B and C.

  Day 1- set A is the master for the days processing, at the end of day, set A is backed up onto set B.

  Day 2- set B becomes the master set and at the end of day, it would be backed up onto set C.

  Day 3- set C will be the master for the third days processing. At the end of day set C is backed up onto set A.

  Day 4- set A has now rotated to become the master for the fourth day of processing.

The considerations for the Fixed Disk are made with respect to the amount of storage available. It would be inadvisable to Backup an entire Fixed Disk daily if only one or two files had changed, the user would only backup the file sets that were modified. The use of three backup diskette sets are still advisable, except they would contain only specific files and would only be restored if necessary.

To allow the user maximum usage and efficiency of the Fixed Disk storage capability it is recommended that all files contained on the Fixed Disk be reorganized on a monthly basis. The reorganization can be accomplished with the use of the Backup Utility, by performing the Backup and the Restore of all files or using the Compress Fixed Disk Directory function.

If data is lost because of a damaged diskette, etc., it is essential that the user be able to reconstruct all entries performed since the last backup. Audit lists, produced after a set of transactions are posted, are ideal sources of this information. If the Audit lists are not produced on a routine basis, it would be necessary for the user to maintain a log to record data and any other information for each entry made into the system, between backups.

Utility Overview

The BACKUP UTILITY basically consists of the following four major functional groups which may be selected from the Master Menu:

- Backup Fixed Disk or Diskette - allows the operator to selectively backup files on the fixed disk or diskettes, and to specify whether the AAI (Automatic Applications Interface) or General Backup method is to be used. AAI backup is used when a Backup Request has previously been made through an application. The Backup Request indicates which files are to be backed up. General Backup is used when the operator is going to determine or specify the diskette or fixed disk files to be backed up.

- Restore File from Diskette to Fixed Disk - allows the operator to transfer data contained on a backup diskette set to a fixed disk.

- Display Directory of Fixed Disk Backup Set - provides the facility to display the backup diskette set directory. This allows the operator to locate and identify a file or group of files in a backup set.

- Compress Fixed Disk Directory - is a Fixed Disk maintenance facility which allows the operator to reorganize the directory and data files thereby increasing disk access speed and making more efficient use of available disk storage capacity.

There are many options to the functions mentioned above. Some of these options require specific information and/or specific materials. For this reason the user should read the user guide for the task being performed, and have all the information and materials available and ready before starting the desired function.

BACKUP UTILITY
MASTER MENU

To access the Backup Utility Master Menu on a new Backup Utility diskette, the diskette must first be configured to match the users machine configuration. Refer to Appendix A in the back of this manual for an explanation of this function. For a previously configured diskette, insert the Backup diskette into Drive 0 and simultaneously depress the CODE and LOAD keys. The system will then request the date and time. After entering this information, the Backup Master Menu will appear on the screen as illustrated below:

```
BACKUP UTILITY              RELEASE n   VERSION n


   PLEASE SELECT APPLICATION .

       1. BACKUP FIXED DISK OR DISKETTE(S)

       2. RESTORE FILE(S) FROM DISKETTE(S) TO FIXED DISK

       3. DISPLAY DIRECTORY OF A FIXED DISK BACKUP SET

       4. COMPRESS FIXED DISK DIRECTORY
```

Select the desired function by entering the appropriate menu item number. Valid entries are any number from 1 through 4 or "END". Selecting item 1 allows backup of either fixed disk or diskettes, whereas menu selection numbers 2 through 4 pertain only to the fixed disk. Selecting item 2 allows the operator to restore data contained on the backup diskette set to the fixed disk. Item 3 will display a directory which lists all the files contained on the backup diskette set, and item 4 allows the operator to maintain the fixed disk for the most efficient use of space available.

If "END" is entered, the system will instruct the operator to insert the desired system diskette into Drive 0 and CODE LOAD.

MASTER MENU ITEM 1
Backup Fixed Disk or Diskette

This selection provides the facility to backup either fixed disk or diskettes. For either media, there are two modes: Automatic Application Interface (AAI) or General Backup. The AAI and General diskette backup selections, on the screen below, DO NOT apply for a one diskette drive system. To perform a diskette backup requires a 2 diskette drive system. All screen prompts within the Backup Utility that refer to Drive 1, will prompt for Drive 0 on a 1 drive system.

When item 1 is selected from the Backup Utility Master Menu the following screen will appear:

```
BACKUP UTILITY                RELEASE n   VERSION n


        FIXED DISK OR DISKETTE BACKUP (F OR D) ?

        AAI OR GENERAL BACKUP (A OR G) ?
```

Enter "F" or "D" in response to the first prompt depending on whether the fixed disk or diskette is to be backed up.

The second prompt is used to specify whether the Automatic Application Interface (AAI) or General backup routine is to be used. AAI may only be selected if a backup interface file has been previously created. This is normally done automatically by the applications during the initiate request for backup processing; refer to the appropriate application's User Guide for additional information. If the interface file has not been created, the General backup function must be selected.

********** W A R N I N G **********

The AAI BACKUP procedure should not be aborted, as this will destroy all necessary backup information that was selected through each application backup request. Be sure that sufficient newly formatted diskettes or previous backup diskettes with the correct internal labels are on hand to complete the backup run.

****

During the backup procedure, a report will be generated which lists all of the files backed up for fixed disk or diskette along with other file information such as: allocated records, active records, and % full. This report should be reviewed and filed. A sample of the report is provided.

********** N O T E **********

If any error messages are reported or asterisks "***" appear after "% FULL", follow the error instructions given by your local support analyst.

****

DISKETTE TO FIXED DISK RESTORE UTILITY - RELEASE n VERSION n PAGE 1

RESTORE RUN LOG
TEST FILES FROM 10/15/80 AT 12:23:09

FILE NUMBER	FILE NAME	DISK UNIT INDEX	DISK UNIT DATA	BEGIN DSK-BLOCK	END DSK-BLOCK	FILE TYPE	ALLOCATED RECORDS	ACTIVE RECORDS	% FULL
1	SIROVERS		4	01-00069	01-01068	R	4000		
2	I1BLKS	4	4	01-01069	01-01069	I	8	8	100 ***
3	I11BLKS	4	4	01-01070	01-01080	I	88	88	100 ***
4	I25BLKS	4	4	01-01081	01-01105	I	200	200	100 ***

RUN DATE: 02/12/81 DISKETTE BACKUP RUN LOG PAGE: 1

LABEL: FILES TO B SOURCE DISKETTE DATE: 02/01/81

FILE NUMBER	FILE NAME	FILE TYPE	ALLOCATED RECORDS	ACTIVE RECORDS	% FULL
1	ISAMFILE	I	200	200	100 ***
2	ISAMFLE	I	400	400	100 ***
3	SEQUEN1	S			
4	SEQUENX	S			
5	SEQUEN2	S			
6	RANDOM2	R	12		
7	RANDOM3	R	16		
8	RANDOM1	R	40		
9	RANDOMX	R	40		

MASTER MENU ITEM 1
AAI Diskette Backup

When AAI Diskette Backup is selected, the utility assumes that the diskette which contains the backup interface file has been inserted into Drive 1. If the interface file is not found on Drive 1, one of two possible messages will be displayed:

FILE NOT FOUND - indicates that the wrong diskette has been loaded into the drive. Insert the diskette which contains the backup interface file.

UNIT NOT READY - indicates that no diskette has been loaded into Drive 1. Again, insert the diskette containing the interface file.

After successfully selecting AAI Diskette Backup, the system will display the following two screens instructing the operator to insert the source and destination diskettes into the appropriate drives:

```
AAI DISKETTE BACKUP


          PLEASE INSERT xx  DATA n FOR USER n

           SOURCE  DISKETTE INTO DRIVE  1

          ENTER 'DONE' WHEN READY ...
```

Insert the specified source diskette into Drive 1 and type "DONE" followed by depressing the RETURN key. The source diskette contains the files to be backed up.

If the proper diskette was not inserted, the previous screen will be repeated. Otherwise, the next screen will appear:

```
AAI DISKETTE BACKUP


              PLEASE INSERT xx  DATA n FOR USER n

              DESTINATION  DISKETTE INTO DRIVE  0

              ENTER 'DONE' WHEN READY ...
```

Remove the Backup Utility diskette (or other diskette) and insert the destination diskette into Drive 0. Note that the destination diskette must be blank (newly formatted) or the internal label must match the source diskette. The destination diskette is the diskette that will receive the files to be backed up.

If the labels match, the dates will be displayed for comparison on the screen as follows :

```
AAI DISKETTE BACKUP


       DATE OF SOURCE DISKETTE IS       08/26/80

       DATE OF DESTINATION DISKETTE IS  06/19/80


OK TO PROCEED ?
```

If "N" is entered in response to "OK TO PROCEED ?", the system will repeat the process just described.

Review the source and destination diskette dates to verify that the diskettes have not been confused, prior to answering "Y" to the "OK TO PROCEED ?" prompt. Under normal circumstances the Source Diskette Date will be a later date than the Destination Diskette Date.

After the labels and dates are verified, the source diskette is copied to the destination diskette. A message appears on the screen identifying the file currently being copied.

If additional diskettes must be copied, the system will repeat the above process, asking for the next source diskette by label ID.

After all required diskettes have been copied the following screen appears:

```
AAI DISKETTE BACKUP


 PLEASE INSERT

      BACKUP UTILITY DISKETTE INTO DRIVE 0

      ENTER 'DONE' WHEN READY ...
```

Remove diskettes in Drives 0 and 1 and insert the Backup Utility diskette into Drive 0. Then enter "DONE" to return to the Backup Utility Master Menu.

MASTER MENU ITEM 1
AAI Fixed Disk Backup

This procedure will create a set of backup diskettes for fixed disk files belonging to one or more applications which have requested backup. The End of Day processing will identify the application and the fixed disk files associated with that application. Several applications may request fixed disk backup.

When AAI Fixed Disk Backup is selected, the system presents the option of creating one backup diskette set for all requested applications or one backup diskette set for each requested application.

```
AAI FIXED DISK BACKUP


          PLEASE SELECT TYPE OF BACKUP  .

       1. ALL REQUESTED APPLICATIONS COMBINED

       2. BY INDIVIDUAL REQUESTED APPLICATION
```

Select the desired option by entering the appropriate item number. Valid entries are 1, 2 or "END". Selecting item 1 will initiate AAI Fixed Disk Backup for all requested applications combined in one set of diskettes, whereas selecting item 2 allows the operator to individually specify the applications to be backed up. Entering "END" will return the system to the master menu.

It is important to note that if selection 1 is used, only those applications with a common cycle should be combined. For example, if some applications are processed daily, another application processed weekly, and a final application processed monthly, then the weekly and monthly applications should be backed up individually. Only the daily applications can be combined on a backup set so that as the backup sets are recycled the monthly or weekly backup data is not lost.

Daily and weekly application may be requested. In this case item number 2 would be selected to backup the weekly applications. Following completion of this, item number 1 would be selected to backup all remaining applications which are daily (once an application is backed up the request for that application is removed).

When item 2 is selected from the submenu, the system will request a two character application ID. by displaying the following prompt:

```
WHICH APPLICATION DO YOU WISH TO BACK UP ? ..
```

Once the operator has selected the application to backup, the system builds a backup control file and processing proceeds to backup the selected files. Refer to Page 20, the General Fixed Disk Backup Section (ITEM 5) for a description of the Fixed Disk Backup procedure.

MASTER MENU ITEM 1
General Diskette Backup

When General Diskette Backup is selected, the operator should have a sufficient amount of newly formatted diskettes for this backup procedure. Upon selection the following screen will appear:

```
GENERAL DISKETTE BACKUP

        PLEASE INSERT  SOURCE  DISKETTE INTO DRIVE 1

        DESTINATION DISKETTE INTO DRIVE  0

        ENTER 'DONE' WHEN READY OR 'END' TO RETURN ...
```

Insert the source diskette into Drive 1, and replace the diskette in drive 0 with the destination diskette. Enter "DONE".

The labels and dates of both diskettes will then be displayed for validation and the operator prompted to respond "Y" (yes) if continuation of backup is desired.

```
GENERAL DISKETTE BACKUP

        SOURCE DISKETTE LABEL IS

        DESTINATION DISKETTE LABEL IS

        DATE OF SOURCE DISKETTE IS

        DATE OF DESTINATION DISKETTE IS

OK TO PROCEED ?
```

If destination diskette internal label does not match the Source diskette label and destination diskette contains data the message, "DISKETTE CONTAINS ACTIVE FILES" will appear. An "N" response to "OK TO PROCEED ?" will redisplay the previous screen, however a "Y" response allows the system to write over the active files on the destination diskette and the files will be lost.

After copying is complete, the system will display the following screen.

```
GENERAL DISKETTE BACKUP

COPY COMPLETE

     DO YOU HAVE ANOTHER DISKETTE TO COPY?
```

A "Y" (yes) response to the above prompt will redisplay the original screen for General Diskette Backup. If the "N" (no) response is given to the screen prompt, the system will display the following screen:

```
GENERAL DISKETTE BACKUP

  PLEASE INSERT

       BACKUP UTILITY DISKETTE INTO DRIVE 0

       ENTER 'DONE' WHEN READY ...
```

Remove source and destination diskettes from Drives 1 and 0 respectively, and insert the Backup Utility diskette into Drive 0. Then enter "DONE" and press RETURN. The system will return to the Backup Utility Master Menu.

MASTER MENU ITEM 1
General Fixed Disk Backup

This procedure will create a set of backup diskettes for selected fixed disk files. The process is divided into two parts; first building the backup control file which identifies the files to be backed up, and then generating the backup diskette set.

BUILD BACKUP CONTROL FILE

This procedure allows the operator to select the files to be backed up. Normally, the system will request an identification label for the backup control file and then proceed to a submenu for building the backup control file. The first screen is shown below. However, if a control file already exists, the system will inform the operator that a $BACKU file is already present and request additional information on what action is to be taken. Refer to the Restart procedure, Appendix B of this manual.

IDENTIFICATION FOR THIS BACKUP RUN:.....

A maximum of 10 characters may be entered at this prompt. This identification of the $BACKU control file, will be used to label all of the diskettes in the backup diskette set. The next screen provides the submenu for building the backup control file:

```
BUILD BACKUP CONTROL FILE

      PLEASE SELECT APPLICATION  .

           1. DISPLAY FIXED DISK FILES

           2. SELECT FIXED DISK FILE(S) FOR BACKUP

           3. DELETE SELECTED FILE(S)

           4. DISPLAY SELECTED FILE(S)

           5. BACKUP SELECTED FILE(S)

     WHAT IS THE FIXED DISK UNIT NUMBER?  .
```

The prompt for the Fixed Disk unit number will only appear if there is more than one Fixed Disk unit configured for the system.

Selection of item 1 will display all the files on the fixed disk; whereas item 2 or 3 allows the operator to add or delete files from the backup control file list and item 4 displays a current list of files to be backed up. Finally, item 5 starts the actual backup process.

The user has the option of aborting the backup from this screen. By entering "END", the following message will appear and the system will return to the master menu.

```
                'BUILD BACKUP CONTROL FILE' ABORTED
```

```
********** W A R N I N G **********

 By exiting this menu via "END", the $BACKU control file
 is destroyed and must be recreated upon restarting the
 General Fixed Disk Backup.

************************************************************
```

BUILD BACKUP CONTROL FILE - ITEM 1
Display Fixed Disk Files

When item 1 is selected from the above submenu, a listing of all of the files (names and types) on the fixed disk will appear, as illustrated below:

```
BUILD BACKUP CONTROL FILE                          CREATED:  date
FILES IN VOL (header title)
FILE NAME:                        TYPE:
          ST.ARCDOC                P
          ST.WPINIT                P
          ST.PRINT2                P
          ST.DIRPRT                P
          ST.SELECT                P
          ST.FORMAT                P
          FDBACK.L                 P
          BACKUP.TMP               D
```

If more than one screen is required to display the fixed disk file listing, the screen may be advanced by pressing the SPACE bar. Pressing the RETURN key will return the system to the submenu.

BUILD BACKUP CONTROL FILE - ITEM 2
Select Fixed Disk File(s) For Backup

When item 2 is selected from the Build Backup Control File submenu, the following screen appears providing the various selection options.

```
BUILD BACKUP CONTROL FILE

        SELECT FILE(S) BY  .

             1. ALL FILES(S)

             2. FILE NAME(S)

             3. PREFIX (BEGINNING LETTER(S))

             4. SUFFIX (ENDING LETTER(S))

             5. FILE TYPE(S)
```

"END" may be entered from this menu. The system will return to the "Build Backup Control File" submenu.

When item 1 is selected, the system will automatically begin building a backup control file for all of the files on the fixed disk unit.

Item 2 along with item's 3, 4, and 5 will accept and process five entries for each screen. After all entries are made, press the RETURN key and the system will return to the "Select File(s) By" submenu. Selection "2" will require a specific filename (maximum of 10 characters) to be entered by the operator. The file name entered for this selection must be correct and complete. ISAM files should be requested by their index file name, i.e. ask for ITMFIL and not for ITMFIL@.

Selections 3 and 4 allow the operator to select a group of files with a common prefix or suffix (maximum of 10 characters). For example, if item 3 is selected and "SCR." is entered, all files starting with "SCR." will be selected for the control file whereas if item 4 is selected, and "TEST" is entered then all files ending with "TEST" will be added to the control file.

With the selection of Item 5, the user has the option to select files by their type. This selection only accepts a one character entry. The file type may be obtained by "DISPLAY FIXED DISK FILES" from the Build Backup Control File submenu. The type is displayed along with the file name. File type "I" refers to both ISAM data and ISAM index files. The utility will automatically backup both the INDEX and DATA portions of the ISAM files.

A backup control file can be built by using a combination of selection options (items 2 thru 5 on the above submenu). Once a file has been selected, it will not be selected again even if it matches the selection criteria.

After the selection entries are processed, a screen appears informing you of the file names that have been selected for the backup control file. A sample screen appears below:

```
BUILD BACKUP CONTROL FILE

FILES ADDED TO LIST:
        BCKCTL
        REVISE

PRESS RETURN TO PROCEED
```

If the number of file names contained on the list exceed the screen display, the prompt "PRESS SPACE BAR TO CONTINUE" will appear. When the complete list has been displayed, "PRESS RETURN TO PROCEED" will be displayed, this will return the system to the Build Backup Control File submenu.

BUILD BACKUP CONTROL FILE - ITEM 3
Delete Selected Files

With selection of Item 3 from the Build Backup Control File submenu, the system will present the following options:

```
BUILD BACKUP CONTROL FILE

        DELETE FILE(S) BY  .

             1. ALL FILE(S)

             2. FILE NAME(S)

             3. PREFIX (BEGINNING LETTER(S))

             4. SUFFIX (ENDING LETTER(S))
```

The options for the Delete Files function are the same as for the Select Files function, except that they remove files from the backup control file and there is no option to delete by file type. After the delete entries are processed, the system will display a list of file names to be deleted.

BUILD BACKUP CONTROL FILE - ITEM 4
Display Selected Files

When item 4 is selected, the following screen appears:

```
BUILD BACKUP CONTROL FILE
CURRENT BACKUP LIST INCLUDES:
HEADER RECORD:
      (header information)
FILE RECORD(S):
      (selected file list)
```

If all selected files will not fit on one screen, press the "SPACE" key to see the next screen. Press RETURN to go back to the submenu.

BUILD BACKUP CONTROL FILE - ITEM 5
Backup Selected Files

When Item 5 of the Build Backup Control File submenu is selected, the system will begin the second phase of General Fixed Disk Backup. During this phase, all files specified on the backup control file will be copied to the backup diskette set.

The system first writes the BACKUP control file ($BACKU) on the fixed disk, then computes a working file and determines the number of diskettes that will be required for this backup run.

********** N O T E **********

This procedure is very time consuming, but is necessary for the actual backup to run efficiently.

****

Upon completion of the above process, the system will display the number of diskettes to be used and the total number of blocks which will be copied, as illustrated below:

```
FIXED DISK TO DISKETTE BACKUP UTILITY   RELEASE n   VERSION n

     THIS BACKUP RUN WILL USE
     BACKUP DISKETTE NUMBERS 1 THROUGH 4
     TOTAL BLOCKS ON THIS RUN = 5944
     OK TO PROCEED WITH BACKUP (Y OR N) ?
```

If the required number of formatted diskettes are not available, answer "N" to the "OK TO PROCEED ?" prompt, which will return to the master menu so that the operator can exit the backup utility by entering "END". The appropriate number of diskettes may then be formatted. To restart and complete the backup run, reload the BACKUP UTILITY, and select the General Fixed Disk Backup, then refer to Appendix B of this manual for additional instructions.

If "Y" is entered in response to the "OK TO PROCEED ?" prompt, the system will instruct the operator to insert the first backup diskette into Drive 1 (or 0 on a one drive system). An example follows:

```
FIXED DISK BACKUP...

    PLEASE INSERT

         BACKUP DATA DISKETTE NUMBER 1

         INTO DRIVE 1

         ENTER 'DONE' WHEN READY OR
         'END' TO RETURN TO MENU ....
```

If "END" is entered, the backup process will be prematurely terminated at the previously completed diskette. The system will prompt for data diskette #1 to be put back into Drive 1 to write the directory for the backup diskette set, and then the system will return to the Backup Utility Master Menu.

********** N O T E **********

Completion of this interrupted backup run will begin with the first incomplete selected file on the Backup Control File list. Refer to Appendix B for information on restarting an incomplete Backup.

****

If "DONE" is entered, the diskette label will be checked. If it is an empty diskette, or a backup diskette with the same backup identification (internal label), the backup to diskette will begin.

If the backup diskette has another backup identification label (i.e. GENLDATA in example below) the operator will be given the option to write over it or use another diskette.

```
FIXED DISK BACKUP...


    DRIVE 1 CONTAINS A BACKUP DISKETTE MARKED
    GENLDATA
    DO YOU WANT TO WRITE OVER IT ? (Y OR N)
```

********** C A U T I O N **********

If a "Y" response to "DO YOU WANT TO WRITE OVER IT ?" is made, the named backup (GENLDATA in example above) will be lost.

****

As each file is copied, a line is printed on the backup log. The operator will be instructed to insert a new diskette when the current one is filled. After the last diskette has been written, the operator will be instructed to reinsert the first diskette so that the directory of this backup diskette set can be written.

MASTER MENU ITEM #2
Restore File(s) From Diskette(s) To Fixed Disk

If the system being used has 2 or more Fixed Disk units, the prompt shown below will be displayed. If the system only has 1 Fixed Disk, the prompt for Data Diskette 1 will appear.

```
DISKETTE TO FIXED DISK RESTORE UTILITY - RELEASE n  VERSION n
RESTORE DATA FILES

       DO YOU WANT TO RESTORE TO THE DEFAULT UNIT ? .

       WHICH DISK UNIT DO YOU WANT TO RESTORE TO ? .
```

The Default unit is the unit the file was on when it was originally backed up. This default unit can be different for each file. An "N" response to "DO YOU WANT TO RESTORE TO THE DEFAULT UNIT?" will bring up the second part of this prompt. All files will be restored to the disk unit that is requested regardless of thier original location.

Restore transfers the files from the backup diskette set to the fixed disk. When Master Menu Item 2 is selected it will request the data diskette 1, of the backup diskette set to be restored to the fixed disk, as shown below:

```
DISKETTE TO FIXED DISK RESTORE UTILITY  -  RELEASE n   VERSION n
RESTORE DATA FILES

   PLEASE INSERT

        BACKUP DATA DISKETTE 1 INTO DRIVE 1

        ENTER 'DONE' WHEN READY

       'END' TO RETURN TO MENU ...
```

This screen prompt will ONLY accept a Data Diskette 1. If any other diskette is inserted, the message "INVALID DISKETTE" will appear and the system will wait for the correct diskette to be inserted. When the correct diskette is inserted, and "DONE" has been entered, the following screen prompt will appear:

1. Starting file number ...

2. Ending file number

This screen prompt asks for the file number, which appears on the Backup Log and can also be obtained from the Directory of the Fixed Disk Backup Set. (refer to Master Menu Item 3 of this Manual)

Enter the file number range to be restored. For example, if starting file 1 to ending file 12 is specified, only files 1 through 12 would be restored to the fixed disk. It is possible to restore just one file. This is done by entering a file number for Starting file, then depress the RETURN key in response to the "ENDING FILE NUMBER..." prompt. After the specified file range has been entered, the message "ANY CHANGE ?" will appear at the bottom of the screen. An "N" response will start the restoration of the selected files. A "Y" response will redisplay the above screen, for new file numbers. Pressing the RETURN key in response to the "Starting file number ..." prompt will restore all files.

If any processing on the application has occurred since the last backup and the data base for that application is lost, all files for that application must be restored, and all processing since the last backup must be redone.

As all the requested files are restored, a "Restore Run Log" prints automatically. A sample Restore Run Log is shown on page 25.

Sample of a Restore Run Log :

```
DISKETTE TO FIXED DISK RESTORE UTILITY - RELEASE n VERSION n                    PAGE 1

RESTORE RUN LOG
BACKUP2/12 FROM 02/12/81 AT 12:12:40

FILE    FILE        DISK UNIT      BEGIN     END       FILE  ALLOCATED  ACTIVE    %
NUMBER  NAME        INDEX DATA     DSK-BLOCK DSK-BLOCK TYPE  RECORDS    RECORDS   FULL

   1    ISAMFILE    5     5        01-00069  01-00093  I     200        200       100 ***
   2    ISAMFLE     5     5        01-00094  01-00193  I     400        400       100 ***
   3    SEQUEN1           5        01-00194  01-00196  S
   4    SEQUENX           5        01-00197  01-00199  S
   5    SEQUEN2           5        01-00200  01-00224  S
   6    RANDOM2           5        01-00225  01-00227  R     12
   7    RANDOM3           5        01-00228  01-00231  R     16
   8    RANDOM1           5        01-00232  01-00241  R     40
   9    RANDOMX           5        01-00242  01-00251  R     40
```

MASTER MENU ITEM #3
Display Directory Of A Fixed Disk Backup Set

This program provides the facility to display a list of all the files on the backup diskette set directory. The directory list can be output to the screen or to the printer. The directory display lists all files and associated file numbers, that are used by Master Menu Item 2.

When Display Directory of a Fixed Disk Backup Set is selected, the following screen will appear:

```
DIRECTORY OF FILE(S) ON A BACKUP DISKETTE SET

   PLEASE INSERT

        BACKUP DATA DISKETTE NUMBER 1

        INTO DRIVE  1

        ENTER 'DONE' WHEN READY OR 'END' TO RETURN TO MENU ....
```

This prompt will ONLY accept Data Diskette 1, if another diskette is inserted the message, "THIS IS NOT BACKUP DATA DISKETTE 1 - TRY AGAIN" will appear, and the system will wait for the correct diskette to be inserted.

After Data Diskette 1 is inserted and 'DONE' is entered the system prompt "DO YOU WANT A PRINTOUT ?" will appear. If "Y" is entered in response to this prompt, the directory list will be output on the printer. An "N" response will display the directory on the screen. Refer to page 28 for a sample of the directory display and the printout report.

Directory display screen:

```
BACKUP OF TEST FILES ON 10/15/80 AT 12:23:09      TOTAL FILES BACKED UP = n

FILE  FILE          BEGIN        END                SIZE/        ALLOC  ACTIVE  FILE
NO.   NAME       DSK-BLOCK    DSK-BLOCK    ORG     EOD   KEY    RECDS  BLOCKS  DATE

  1   SIXROVERS  01-00069    01-01068     R      128           4000   1000
  2   I1BLKS     01-01069    01-01069     I      60    3        8      1
  3   I11BLKS    01-01070    01-01080     I      39    24       88     11
  4   I25BLKS    01-01081    01-01105     I      53    10       200    25
```

PRESS RETURN TO CONTINUE, OR ENTER 'END' TO RETURN TO MENU ...

Directory report:

RUN DATE: 01/20/81 BACKUP DIRECTORY OF REORGDIRCT ON 01/19/81 AT 12:38:14 PAGE 1

TOTAL FILES BACKED UP = 19

FILE NO	FILE NAME	DISK UNIT INDEX	DISK UNIT DATA	BEGIN DSK-BLOCK	END DSK-BLOCK	ORG	SIZE/ EOD	KEY	ALLOC RECDS	ACTIVE RECDS	ACTIVE BLOCKS	FILE DATE
1	XXINIT.OBJ		5	01-00069	01-00074	S	473				6	11/17/80
2	XXDRCT	5	5	00-00000	00-00000	I	150	6	121	0	0	
3	XXDISK	5	5	01-00075	01-00075	I	1	16	121	6	1	
4	XXPROJ	5	5	01-00076	01-00076	I	1	16	121	6	1	
5	XREF1.OBJ		5	01-00077	01-00081	S	430				5	10/22/80
6	XREF2.OBJ		5	01-00082	01-00085	S	324				4	10/22/80
7	A	5	5	00-00000	00-00000	I	100	10	100	0	0	
8	YYINIT.OBJ		5	01-00086	01-00091	S	473				6	11/17/80
9	YYDRCT	5	5	00-00000	00-00000	I	150	6	121	0	0	
10	YYDISK	5	5	01-00092	01-00092	I	1	16	121	6	1	
11	YYPROJ	5	5	01-00093	01-00093	I	1	16	121	6	1	
12	ZZINIT.OBJ		5	01-00094	01-00099	S	473				6	11/17/80
13	ZZDRCT	5	5	00-00000	00-00000	I	150	6	121	0	0	
14	ZZDISK	5	5	01-00100	01-00100	I	1	16	121	6	1	
15	ZZPROJ	5	5	01-00101	01-00101	I	1	16	121	6	1	
16	WWINIT.OBJ		5	01-00102	01-00107	S	473				6	11/17/80
17	WWDRCT	5	5	00-00000	00-00000	I	150	6	121	0	0	
18	WWDISK	5	5	01-00108	01-00108	I	1	16	121	6	1	
19	WWPROJ	5	5	01-00109	01-00109	I	1	16	121	6	1	

********** N O T E **********

If a file shows BEGIN and END DSK - BLOCK as all zeros (files 2,7,9,13 and 17 in the example above). The files contain no active data, therefore it does not use any Backup Diskette space, but Backup does maintain the file name and size for the purpose of restoring.

****

APPENDIX

MASTER MENU ITEM 4
Compress Fixed Disk Directory

Master Menu item 4 is a Fixed Disk maintenance function used to reorganize the active filenames of the Fixed Disk directory and the active files in the file data area. The use of this Item can make Fixed Disk access faster and allows for more efficient use of the file data area.

```
COMPRESS FIXED DISK DIRECTORY

        PLEASE SELECT APPLICATION  .

            1. COMPRESS DIRECTORY ONLY

            2. REORGANIZE DIRECTORY THROUGH
               BACKUP AND RESTORE
```

Selection of option 1 will resequence the Fixed Disk directory by removing all deleted filenames and arranging the remaining active filenames to the front of the directory. This option has no effect on the file data portion of the Fixed Disk.

Option number 2 also resequences the Fixed Disk directory and in addition arranges the active data files to the front of the Fixed Disk data area. This allows for the most efficient use of available file data area.

If the system being used is configured for 2 or more Fixed Disk units the following prompt will be displayed. If the system has been configured for 1 Fixed Disk the prompt will not appear.

```
COMPRESS FIXED DISK DIRECTORY

   WHAT IS THE FIXED DISK UNIT NUMBER ? .
```

APPENDIX A
Configure Backup Utility Diskette

Before the Backup Utility diskette may be used, it must be configured to match the configuration of the system. Therefore, when an unconfigured utility diskette is loaded, the system will request the following configuration information:

```
CONFIGURE BACKUP UTILITY DISKETTE

    HOW MANY DISKETTE DRIVES ARE THERE ?

    IS THE DISKETTE SINGLE OR DOUBLE SIDED (S OR D) ?

    HOW MANY UNITS WILL BE ASSIGNED TO FIXED DISK ?

    ENTER FIXED DISK UNIT ASSIGNMENTS:

  (Example of Fixed Disk Assignments)

   U4=F0    U5=F1    U6=F2    U7=F3
```

After the last data entry is made, the screen prompt, shown below, will appear.

```
                PLEASE CODE LOAD AGAIN
```

At this time the utility diskette will be configured for the type of system that the user entered previously. The BACKUP UTILITY will also ask for the date/time entry again, then the MASTER MENU will be displayed on the screen. The next time the utility diskette is used, the configure function will not appear, it will go directly to the MASTER MENU.

********** N O T E **********

If the users system should change at a later date, a new BACKUP UTILITY diskette must be configured to match the new system configuration.

****

APPENDIX B
Fixed Disk Backup Restart

When General or AAI Fixed Disk Backup is selected through item 1 of the Master Menu and a previous backup has been prematurely terminated, the following screen will be displayed:

```
$BACKU FILE ALREADY ON UNIT 4

DO YOU WANT TO WRITE OVER IT ?
```

If "Y" is entered the system will not restart the backup run that was previously terminated. If General Fixed Disk Backup was selected the system will request an identification for this backup and proceed as described in the General Fixed Disk Backup section of this manual. However, if AAI Fixed Disk Backup was selected, the system will proceed with the backup of the selected application, as outlined in the AAI Fixed Disk Backup section. The backed up portion of the terminated backup run will be lost. On the other hand, if "N" is entered, the following prompt will be displayed:

```
"DO YOU WANT TO RUN BACKUP ? "
```

If in the AAI Backup mode, an "N" response to the above prompt will return the system to the Master Menu. If "N" is entered in response to this prompt, in the General Backup mode, the prompt will be replaced by the following message: 'BUILD BACKUP CONTROL FILE' ABORTED. In either the AAI or the General Backup mode, if "Y" is entered, the system prints out the Backup Run Log headings and begins to determine the starting point for backup completion. After this processing delay, a screen similar to the following will appear:

```
BACKUP WORK FILE IS PRESENT

BACKUP OF MT FD DATA ON 10/04/80 AT 125101
WAS STOPPED BEFORE IT WAS COMPLETE
IGNORE THAT RUN AND CONTINUE WITH THIS ONE (Y OR N) ?
```

Entering "Y" will restart the backup from the beginning of the backup control file, and backup all files including files previously backed up; whereas entering "N" to the prompt will result in the following prompt being displayed, provided that there are files which have been previously backed up:

```
LAST FILE SUCCESSFULLY BACKED UP WAS NUMBER n - filename
OK TO CONTINUE FROM THIS FILE (Y OR N) ?
```

A "Y" response to this query will allow the system to continue the previously initiated backup from where it left off. However, if "N" is entered, the system will restart the backup process from the beginning of the control file. In either case, the system will begin preparing a work file, and upon completion, will display the following message:

```
THIS BACKUP RUN WILL USE
BACKUP DISKETTE NUMBERS n THROUGH n
OK TO PROCEED WITH BACKUP (Y OR N) ?
```

A "Y" response to this prompt will start the backup run at the previously established starting point. However, an "N" response will leave the control file intact and the system will return to the Backup Utility Master Menu.